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At the close of the proceedings the Astronomer Royal favoured the meeting with an oral exposition of his views on the Motion of the Solar System in Space. An abstract of a paper embodying his recent researches on this important subject will be found at page 175.

MISCELLANEOUS INTELLIGENCE.

Death of Dr. Wichmann.

Died on the 7th of February, 1857, at five o'clock in the morning, Dr. Moritz Ludwig George Wichmann, Observer of the Königsberg Observatory. Death gently terminated a long course of suffering, which a milder climate might have alleviated, but could hardly have removed.

Wichmann was born on the 14th of September, 1821, at Celle, in the kingdom of Hanover. He first studied at Göttingen, and subsequently, in 1843, proceeded to Königsberg. Here, in 1844, he was appointed by Beud Assistant at the Observatory. In 1847 he established himself as a tutor in the University, and upon Dr. Busch being appointed Director of the Observatory in 1849, he obtained in the following year the situation of observer in that institution, which he continued to hold till his death.

He had been long in delicate health, but in 1853 he fell seriously ill from a complaint of the chest, and in the following year he proceeded to Italy in hopes of deriving benefit from the climate of that country. In August 1855 he returned, his health somewhat improved, to Königsberg after an absence of fourteen months. He now, in conjunction with Professor Luther, discharged the duties attached to the directorship of the observatory, which had become vacant by the death of Dr. Busch. About the middle of December in last year he was attacked by a severe illness which terminated in death.*

Admiral Smyth has forwarded to the Editor a copy of the Report of the Committee of the Overseers of Harvard University, appointed in February of last year to visit the Observatory of Harvard College. The visitation took place on the 15th of December last, and it acquires a melancholy interest from the circumstance of its being the last at which our late dis-

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* Translation of a notice by Dr. Peters, inserted in No. 1181 of the *Astronomische Nachrichten.*

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tinguished Associate, Professor W. C. Bond, officiated as Director. We extract the following passages from the Report:—

"The Director acknowledges that the dome as well as the pier which supports the great equatoreal are all that can be desired. Indeed, the fact that for several years there has been no re-adjustment of the polar axis of the telescope, furnishes unmistakeable testimony to the firmness of the structure which sustains it. This noble instrument, the Committee are happy to say, is still in perfect preservation; and continues to give the satisfaction of former years. The lenses of the object-glass have been separated during the last year, and no enlargement of the minute spots heretofore noticed has been detected. The observations and measurements made by this instrument appear to the committee to be of the utmost value in extending astronomical science; and the course pursued by the observers, not so much to accumulate observations on the same object, as to apply its power to the examination of the more remote ones, appears to us to be judicious. Observations for the revision of the position and magnitude of the stars in the interesting nebula of *Orion*, were commenced in October 1857, and brought to a close in March 1858. A systematic and thorough examination of this astonishingly rich region of the heavens was called for by singular variations recognised at different periods. From the data thus obtained, a chart may be constructed, which will faithfully represent the relative position and brightness of the separated stars. The great equatoreal has also been applied to the frequent examination of the planets *Jupiter*, *Saturn*, and *Neptune*, as well as many of the asteroids and comets.

"Since our last visit to the Observatory, the improved Bowditch comet-seeker, in the hands of Mr. Horace P. Tuttle, has been surprisingly successful. No fewer than five independent discoveries have crowned his efforts. The fourth in the order of these discoveries was the great comet of Donati, first seen at Cambridge on the 28th of June last; and it having early, and while yet telescopic, given promise of great brilliancy, extensive preparations were made to subject it to close scrutiny. The expectations of the observers were fully realised; and from the 28th of June to the 25th of October, their exertions were unremitting. If we except the comet of 1811 (its rival in beauty and its superior in the period of its visibility), no recorded comet gave greater facilities for the investigation of its physical properties. Of these favourable circumstances the observers availed themselves; and the fruits of their labours, so far as we have been able to learn, are unequalled. The various drawings of this interesting object, faithfully and skilfully executed by Mr. Henry G. Fette and the young Bond were examined by the committee with admiration. They exhibit at a glance the various changes and vagaries of the comet. These drawings have since been engraved, and in connexion with the explanations and observations of the assistant have been pub-

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lished and circulated extensively in a treatise which reflects the highest honour upon the Observatory and upon its enlightened author.

"In their last year's report, the Committee dwelt upon the labours of the preceding year in the delineation of celestial objects by photography. They believed they then saw the germ of an invaluable mode of celestial research. In this they have not yet been disappointed. Their anticipations of the progress of a single year have been more than realised. The Director in his report of last year, alluded to the possibility of distinguishing stars by their chemical action, and the investigations of the assistant observer leave no question of its practicability; and the curious fact is given that the stars *α Lyræ* and *Arcturus*, though of nearly the same magnitude as seen by a telescope, or unassisted vision, yet in photographic power the former surpasses the latter by seven times.

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"At the instance of the Superintendent of the Coast Survey, a large number of occultations of the stars constituting the *Pleiades* have been observed simultaneously with observers at several positions near the northern extremity of the Gulf of California, as well as on the border of the Lakes Michigan and Superior. It is gratifying to perceive that the electric recording apparatus so long in use in this Observatory is appreciated in Europe, and under the title of the American method is now extensively used.

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"Finally, the Committee are satisfied from the report of the Director, and much other testimony and observation, that a great amount of labour has been performed, and well performed, during the last year, and they regret that the means are not in hand to give to the world, by way of publication, the large collection of results which are constantly accumulating."

The Report concludes with an allusion to the death of Mr. Bond, expressed in the following terms:—

"The Committee have hitherto dwelt on matters of an interesting and pleasing character. They come now to a most melancholy part of their duty, it is to speak of the death of the able Director of the Observatory, Prof. William Cranch Bond, which occurred on the evening of the 29th ult. On the 15th of December last, in somewhat feeble but usual health, and depressed by a family affliction, the death of Mrs. George P. Bond, he read to us in his wonted dignity and calmness his annual report, from which most of the facts in this report are derived. His oral communications on the occasion, though given with his characteristic calmness, were strongly marked with the zeal in his favourite pursuit which has distinguished his whole life. Known and appreciated as an accurate and truthful observer, wherever the science of astronomy is cultivated, his death will be justly deemed a great loss to science.

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Several members of this Committee have enjoyed the privilege of his counsel and friendship for more than thirty years, and in yielding to the mandate that time to him shall be no longer, their humble consciousness is, that a great and a *good* man is no more."

The Society will be gratified to learn that Mr. G. P. Bond has been appointed Director of the Observatory of Harvard College in the room of his lamented father.

RECENT PUBLICATIONS.

Report on the Recent Progress of Theoretical Dynamics.

By A. Cayley.*

In this report Mr. Cayley confines himself to the general theories of dynamics. The special problem of the variation of the elements of a planet's orbit is alone alluded to in consequence of its historical connexion with the subject of the report. The author gives a masterly survey of the progress of research from Lagrange's establishment of the equations of motion by a combination of the principle of virtual velocities with D'Alembert's principle, down to the labours of the geometers of the present day. At the close of his report he sums up the leading steps in the series of investigations. These are: first, the establishment of the Lagrangian form of the equations of motion; secondly, Lagrange's theory of the variation of arbitrary constants, a theory perfectly complete in itself, and it would not have been easy to see, *à priori*, that it would be less fruitful in results than the theory of Poisson; thirdly, Poisson's theory of the variation of arbitrary constants, and the method of integration thereby afforded; fourthly, Sir W. R. Hamilton's representation of the integral equations by means of a single characteristic function determinable *à posteriori*, by means of the integral equations assumed to be known, or by the condition of its simultaneous satisfaction of two partial differential equations; fifthly, Sir W. R. Hamilton's form of the equations of motion; sixthly, Jacobi's reduction of the integration of the differential equations to the problem of finding a complete integral of a single partial differential equation, and the general theory of the connexion of the integration of a system of ordinary differential equations, and of a partial differential equation of the first order, a theory, however, of which Jacobi can be considered only as the second founder; seventhly, the notion arising from the researches of Lagrange and Poisson, and ulterior development of the theory of a system of canonical integrals.

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* *Report of the Twenty-seventh Meeting of the British Association for the Advancement of Science for* 1857. London, 1858.